

REMARKS

Reconsideration is respectfully requested in view of the amendments and remarks herein.

Obviousness Rejection

Claims 1-20 stand rejected under 35 U.S.C. 103(a) as being obvious over Blatz (U.S. Pat. No. 5,770,654) in view of Hedrick et al. (U.S. Pat. No. 3,419,517).

Claim 1 is directed to a thermoplastic polyamide composition comprising: (a) from about 5 to about 30 weight percent of a free-flowing toughener comprising from about 20 weight percent to about 95 weight percent polyvinyl butyral; (b) 95 to 25 weight percent polyamide that is melt processible below about 320°C and which has a number average molecular weight of at least 5,000; (c) a mineral filler in an amount of from about 10 to about 45 weight percent of the total composition; and (d) optionally a coupling agent. Claim 8 is directed to an article prepared from the composition of Claim 1.

The Patent Office's position seems to be that Blatz discloses all of the claimed features of the present invention except that Blatz does not describe a polyamide composition comprising a mineral filler. The Patent Office points to Hedrick to supply the teaching of mineral fillers for polyamide compositions, stating that one of ordinary skill in the art would be motivated by an expectation of success to combining the two references and thereby obtain the Applicant's claimed invention.

Applicants traverse the rejection for the reasons that (a) the Action improperly combines the two cited patents, improperly reconstructing the invention through hindsight and ignoring the express language of Blatz. In addition, applicants traverse this rejection for the reason that the invention provides unexpected results.

First, applicants point out that Blatz is specifically directed to an unfilled composition. Blatz's use of "consisting essentially of" to describe the Blatz composition in the Summary of the Invention shows Blatz's intention to describe the specific composition described therein, not merely a preferred embodiment.

Blatz discloses polyamide compositions that consist essentially of plasticized polyvinylbutyral and polyamide. These compositions do not include filler.

Most notably, the Summary of the Invention of Blatz uses the transitional phrase "consisting essentially of" in describing the Blatz composition. The Summary of the Invention of a patent describes the invention in the broadest terms contemplated by the inventors and is not merely focused on a preferred embodiment as asserted in the Action.

Here, it is very important to focus on the fact that the phrase “consisting essentially of” appears in the Summary of the Invention, not just in the claims, and that the phrase is used in the first description of the invention, not in describing a preferred embodiment. This shows the intent of the inventors to limit the scope of the invention to the specified materials and those that do not materially affect the basic and novel characteristic(s) of the claimed invention. See, e.g., MPEP 2111.03.

In this regard, applicants strongly assert that addition of 10% or more of mineral filler materially affect the basic and novel characteristic(s) of the claimed invention, and point to the examples in support of this point.

The fact that the Summary of the Invention describes the invention, not simply a preferred embodiment, can be seen from 37 CFR 1.73 and MPEP 608.01(d). A Summary of the Invention is required in a patent application according to 37 CFR 1.73, which states:

“A brief summary of the invention indicating its nature and substance, which may include a statement of the object of the invention, should precede the detailed description. Such summary should, when set forth, be commensurate with the invention as claimed and any object recited should be that of the invention as claimed.”

MPEP 608.01(d), describes the Summary of the Invention portion of a patent application as follows:

“Since the purpose of the brief summary of invention is to apprise the public, and more especially those interested in the particular art to which the invention relates, of the nature of the invention, the summary should be directed to the specific invention being claimed, in contradistinction to mere generalities which would be equally applicable to numerous preceding patents. That is, the subject matter of the invention should be described in one or more clear, concise sentences or paragraphs. ...”

“The brief summary, if properly written to set out the exact nature, operation, and purpose of the invention, will be of material assistance in aiding ready understanding of the patent in future searches. ...”

Given the fact that Blatz uses the transitional phrase “consisting essentially of” in the first description of the invention in Blatz’s Summary of the Invention, the invention of Blatz was clearly intended to exclude items such as filler. The Summary of the Invention is not merely describing a preferred embodiment, it is describing the invention itself. Therefore, the cited patents cannot be combined as in the rejection, and for this reason alone the rejection is an improper hindsight rejection.

The Advisory Action considered the above arguments and took the position that Blatz’s contains teachings that show that fillers are contemplated by Blatz. The Action states

that since Blatz column 4, lines 20-23 and 27-31 teaches the “incorporation of inorganic powder or pigments is acceptable”, so that “the incorporation of an inorganic material such as filler will not affect the basic properties of the composition of Blatz.”

Blatz states:

“The polyamide was in all cases pelletized commercial nylon 6 available from Allied-Signal Company under the trademark CAPRON®. PVB was recovered, colored trim material, in flake form, having dimensions of about 6.35x6.35x(0.5 to 2.0) mm. Recovered plasticized PVB flake is quite tacky and tends to agglomerate. Because of that, it is practical to dust it with an inorganic or organic powder to prevent agglomeration. In this case, PVB flake was dusted with 1% of powdered high density polyethylene. This PVB was made from polyvinyl alcohol obtained from fully hydrolyzed polyvinyl acetate, leaving about 23% of the initial hydroxyl groups free, i.e., unconverted to ketal groups. The plasticizer was tetraethylene glycol di(n-heptanoate), which was present in an amount of about 23% of recovered PVB. Small amounts of dyes, pigments, and stabilizers were also present in this material.”

Applicants submit that the Advisory Action misconstrues the teachings of Blatz and the implications thereof. Here, it is necessary to look at the specific teachings of Blatz column 4, lines 20-23 and 27-31, which are cited in the Advisory Action. Column 4, lines 21-23, discusses the problems associated with PVB flake agglomerating. Blatz teaches that it is practical to dust PVB used in the composition with an inorganic or organic powder to prevent agglomeration. Then, Blatz goes on to provide an example of dusting PVB flake with 1% of powdered high density polyethylene. Blatz teaches using small amounts of inorganic or organic powder to prevent agglomeration, such as 1% of powdered high density polyethylene. The person of ordinary skill in the art would not be led by that teaching to disregard Blatz express and repeated use of “consisting essentially of” and add mineral filler in an amount of from about 10 to about 45 weight percent of the total composition to a thermoplastic polyamide composition.

Concerning the above, applicants point out that the claims are directed to use of more than ten times the amount of filler than in Blatz and are using the filler in an entirely different way and for entirely different purposes. Therefore, the person of ordinary skill in the art would not combine the documents as asserted.

Blatz also teaches that “Small amounts of dyes, pigments, and stabilizers were also present in this material.” While there is no teaching of the specific amounts of these additives, again applicants point to the fact that Blatz is teaching use of “small” amounts of these additives and does not disclose which ones or suitable amounts. Certainly there is no basis for concluding that this teaching would lead the person of ordinary skill in the art to read into the claims that use of mineral filler in an amount of from about 10 to about 45 weight

percent of the total composition to a thermoplastic polyamide composition. Moreover, the person of ordinary skill in the art would not consider those amounts of additives to have the significant impact on the composition that the larger amounts used in this invention provide.

Second, applicants point out that Hedrick is describing a composition comprising nylon and mineral filler, but does not teach use of from about 5 to about 30 weight percent of a free-flowing toughener comprising from about 20 weight percent to about 95 weight percent polyvinyl butyral. There is nothing in either reference that would indicate the compatibility of the toughener in filled systems, and thus there is nothing that would motivate the person of ordinary skill in the art to combine the cited patents as in the rejection. Thus, applicants submit that the rejection is based upon an improper hindsight reconstruction of the invention using an improper obvious to try standard.

Applicants also submit that the claimed invention provides an unexpected balance of both strength, as demonstrated by flexural modulus, and impact, as demonstrated by notched izod. This can be seen by comparing the invention with nylon 6 and nylon 6,6 data.

In order to provide a comparison, applicants have compared data in the patent application with data available in the public domain. Much of the data concerning nylon 6 and nylon 6,6 was obtained from MatWeb <http://www.matweb.com/>. Data is also presented from the DuPont Zytel® Nylon Resin Product and Properties Guide, available at http://www.plastics.dupont.com/plastics/pdflit/americas/zytel/231094d.pdf?GXHC_locale=en_US.

In order to view the comparison, applicants have provided the following table. Please note that in some cases the Notched Izod data was multiplied by 100 in order to present all of the data in J/m units (instead of presenting some in J/cm). Please also note that the data is not intended to show comparison measured using the same techniques and equipment, and instead is intended to show trends.

Sample	<u>Strength</u>	<u>Impact</u>
	Flexural Modulus (Gpa)	Notched Izod (J/m)
Nylon 6	2*	250*
Nylon 6, 30% Mineral Filled	3.9*	81*
Nylon 6, 40% Mineral Filled	4.8*	65*
Nylon 6, Impact Grade	1.6*	680*
Nylon 6, Mineral Reinforced, Impact Grade	3.2*	160*
Nylon 66	2.4*	150*
Nylon 66, 10% Mineral Filled	4.2*	89*
Nylon 66, 20% Mineral Filled	6.1*	46*
Nylon 66, 30% Mineral Filled	7.1*	100*
Nylon 66, 40% Mineral Filled	6.7*	60*
Nylon 66, Impact Grade	2.1*	550*
Nylon 66, Mineral Filled, Impact Grade	4.6*	76*
Nylon 6,6 – Zytel® 101 (from MatWeb)	2.83	-
Nylon 6,6 – Zytel® 101, 30% Mineral Filled (from MatWeb)	6.55	-
Zytel® 101 (from DuPont literature)	2.83	53
60% Zytel® 101 Nylon, 40% Mineral - Comparative Example 2	4.95	44.5
51% Zytel® 101 Nylon, 40% Mineral, 9% Free-Flowing Toughener – Ex. 1	4.43	45.8
48% Zytel® 101 Nylon, 40% Mineral, 12% Free-Flowing Toughener – Ex. 2	3.93	48.7
42% Zytel® 101 Nylon, 40% Mineral, 18% Free-Flowing Toughener – Ex. 3	2.71	45.7
42% Zytel® 101 Nylon, 40% Mineral, 18% Free-Flowing Toughener (9% polyolefin having anhydride functionality) – Ex. 4	3.02	57

*Average

From the above, it can be seen that the general trend shown in the literature for nylon 6 and nylon 66, including impact grades, is for addition of mineral to provide an increase in strength and a significant decrease in impact. Unexpectedly this trend can be reduced by adding the tougheners of this invention. In fact, Example 4 actually obtained better impact than would be expected based upon the literature data.

To better understand the data, consider this excerpt from the above table:

Sample	<u>Strength</u>	<u>Impact</u>
	Flexural Modulus (Gpa)	Notched Izod (J/m)
Nylon 66	2.4*	150*
Nylon 66, 10% Mineral Filled	4.2*	89*
Nylon 66, 20% Mineral Filled	6.1*	46*
Nylon 66, 30% Mineral Filled	7.1*	100*
Nylon 66, 40% Mineral Filled	6.7*	60*
Nylon 66, Impact Grade	2.1*	550*
Nylon 66, Mineral Filled, Impact Grade	4.6*	76*

From this table, it can be seen that addition of impact modifier increase the average Notched Izod value for Nylon 66 polymers. That is, the average Notched Izod rises from 150 J/m to 550 J/m. However, when mineral filler is added the Notched Izod values are substantially lower than the values obtained with Nylon 66 by itself. From the data, it appears that the mineral filler seems to destroy the benefit obtained with the impact modifier.

Comparing the literature value for Zytel[®] 101 nylon resin to the value of Comparative Example 2, it can be seen that the mineral filler also reduces the impact values obtained with Zytel[®] 101 nylon resin. However, when the toughener of the invention is used in mineral filled systems, the impact values are comparable or better than those obtained with Zytel[®] 101 nylon resin by itself. This result is unexpected.

For the above reasons, applicants respectfully request withdrawal of the rejection of the claims as obvious over Blatz in view of Hedrick.

Amendments

The amendments to the claims are supported as follows.

Claim 1 is amended to correct the grammar.

Claim 2 is amended to recite “or” as supported at page 4, lines 18-19 and 26-31.

Please note the “or” at the end of line 30.

New claim 21 is presented as supported at page 4, lines 18-19 and 26-30.
Entry and consideration are respectfully requested.

Conclusions

In view of the foregoing, allowance of the above-referenced application is respectfully requested. Should any matter remain unresolved by this Response, the Examiner is invited to telephone the undersigned at the below-listed direct dial telephone number in order to expedite prosecution.

Respectfully submitted,



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